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Fungicides for Shrubs and Vines

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Control Plant Disease

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in yard and garden

Control

PLANT DISEASES

Mimeo BP 2-12

Fungicides for Shrubs and Vines

Shrubs and vines are used around the home grounds mainly as landscape supplements for flowers, trees and lawns. Like their garden neighbors, shrubs and vines may fall victim to a variety of plant diseases.

Diseases are, of course, unwelcome visitors any time, but the extent of damage they do to shrubs and vines usually varies from season to season. These diseases are rarely fatal at first. But if permitted to go unchecked for several years, they will gradually weaken costly perennial shrubs and vines until the combined effects of disease, insects, and weather kill the plants.

Most common vine and shrub diseases can be prevented, but they are often impossible to eliminate after they are well established.

CONTROL THROUGH CULTURAL METHODS

No one method will control all diseases of shrubs and vines. In most cases, it takes a combination of chemical and cultural practices to prevent plant disease damage. Here are the basic cultural measures that homeowners should follow:

1. Plant shrubs and vines in well-drained sunny locations.
2. Plant only winter hardy, locally-adapted types.
3. Give them plenty of fertilizer and water.

4. Collect and burn any diseased leaves and twigs to prevent new infections. Prune out any cankered and diseased wood in the spring to prevent spread of disease as well as to improve appearance of the shrub.

5. Treat with an antiseptic agent (such as orange shellac) any badly bruised, cut or splintered plant parts, including areas where diseased tissue has been removed. Before applying a dressing, smooth the surface of the wound and taper the margin to an elliptical form with tapered ends.

CONTROL THROUGH CHEMICAL METHODS

Fungicidal chemicals can protect shrubs or vines against disease (1) by preventing a disease-causing organism from becoming established or (2) by killing or checking one already established. Whether fungicides are applied as sprays or dusts, to be effective they must be applied uniformly to all susceptible plant parts and must be reapplied at 7 to 10-day intervals as long as the danger of plant disease exists.

No single fungicide will effectively control all diseases of shrubs and vines. However, for the homeowner with only a few shrubs, an all-round spray combination, such as ferbam-sulfur or the commercial general-purpose sprays or dusts, should do. On the other hand, specific fungicides recommended for specific diseases will give best results.

Common Fungicides

These fungicides are suggested for shrub and vine disease control:

Bordeaux Mixture: A combination of copper sulfate (blue vitriol) and fresh hydrated spray lime in water, which forms a protective, membranous coating on the plant. Formulations are expressed as ratios, such as 8-8-100, which means 8 pounds copper sulfate and 8 pounds of hydrated spray lime in 100 gallons of water.

To make small volumes of bordeaux mixture, substitute for each pound of copper sulfate in the 100-gallon formula, 1/3 table-spoon per gallon of water; and substitute for each pound of hydrated spray lime in the 100-gallon formula, 1 tablespoon per gallon of water. For example, to make 1 gallon of an 8-8-100 bordeaux mixture, first dissolve 2 2/3 tablespoons of copper sulfate (1/3 x 8) in 1/2 gallon of water, then dissolve 8 table-spoons of lime (1 x 8) in 1/2 gallons of water. Finally, mix the two solutions together. To be effective, bordeaux mixture must be made in this manner.

Commercial formulations known as "Ready-prepared Bordeaux Mixture" are available and should be used according to the manufacturer's directions.

Captan: A pale yellow powder containing 50 to 80 percent active material. Sold under such trade names as Orthocide Garden Fungicide, Captan 50-W, Orthocide 50-W, etc.

Ferbam: A black wettable powder containing 76 percent active material. Sold under such trade names as Fermate, Coromate, Ferberk, Niagara Ferbam, etc.

Fixed Copper: Copper salts containing from 25 to 55 percent metallic copper. Sold under such trade names as Tri-Basic Copper Sulfate, Copper Compound A, C.O.C.S., Micro Nu-Cop, etc.

Karathane WD: A yellow powder containing 22.5 percent active material. Specific fungicide for powdery mildew.

Lime-Sulfur: A caustic amber liquid containing about 30 percent calcium polysulfides used primarily as a dormant or delayed dormant spray.

Phaltan (folpet): A wettable powder sold under such trade names as Stauffer Folpet 75-W, Ortho Phaltan 50 Wettable, Ortho Rose and Garden Fungicide, etc.

Wettable Sulfur: Elemental sulfur of small particle size combined with a wetting agent. Sometimes referred to as "dry wettable sulfurs". Sold under such trade names as Hy-Tox Sulfur (wetable), Kolosul, Magnetic '95', Micro Florox Wettable Sulfur, Bon-sul Sulfur, etc.

Zineb: A tan wettable powder containing 65 percent active material. Sold under such names as Dithane Z-78, Ortho Zineb Wettable, Blightox 65-W, DuPont Fungicide 'A' Parzate Zineb Fungicide, etc.

FUNGICIDE CONVERSION TABLES

1 teaspoon (level) = 5 milliliters
 1 tablespoon (level) = 3 teaspoons
 1 cup = 16 tablespoons = 8 fluid ounces
 1 pint = 2 cups
 1 gallon = 16 cups = 128 fluid ounces = 3,785 milliliters.

Fungicide	Amount in 1 gallon	Amount in 100 gallons
Acti-dione Pm.	5 Tbs	3 lbs
Captan 50% WP	1 1/2 Tbs	2 lbs
Copper sulfate (Snow)	2 tsp	2 lbs
	1 7/8 Tbs	6 lbs
	2 1/2 Tbs	8 lbs
Ferbam 76% WP	2 1/2 Tbs	2 lbs
Fixed copper 50% WP	2 Tbs	4 lbs
25% WP	4 Tbs	8 lbs
Karathane WP	1 tsp	8 ozs
Lime-sulfur liquid	5 Tbs	2 gals
Wettable sulfur WP	2 Tbs	4 lbs
Zineb 65 or 75% WP	1 1/3 Tbs	1 1/2 lbs
	2 Tbs	2 lbs

PRESCRIPTIONS FOR SHRUB AND VINE DISEASE CONTROL (Unless otherwise noted, commercial formulations of the common fungicides mentioned in column 4 are as follows: captan 50% wettable powder, ferbam 76% wettable powder, Karathane 22.5% wettable powder, thiram 75% wettable powder, and zineb 75% wettable powder.)

Plant	Disease	Symptoms	Fungicide and Amount
Ajuga (creeping bugleweed)	Crown rot	Brown to black discoloration of crown. Plants turn yellow, wilt and die.	Drench soil around plants in spring with Terraclor 75% WP at 1 Tbs. per gal. water. Use 1 pt. per sq. ft. of soil.
Alder	Powdery mildew	White powdery mold on leaves and buds.	When mildew appears, spray with <u>either</u> wetable sulfur 95% WP at 2 Tbs. per gal. water <u>or</u> Karathane at 2 tsp. per gal. water.
Almond (Flowering)	Blossom and twig blight	Sudden wilting of blossoms followed by dying of twigs.	Spray with captan at 2 Tbs. per gal. water. Make 2 applications at 7-day intervals start- ing when first blossom opens.
Azalea	Septoria leaf spot (Angular leaf spot)	Small yellow spots on leaves with brown center. Later, definite ring develops around the spot. Infected leaves fall prematurely.	Spray with zineb at 2 Tbs. per gal. water at 2-week intervals from July 1-August 15.
	Bud and twig blight	Flower buds infected in spring. Buds scales turn silvery gray. Buds and flowers dwarfed and shrivelled. Shrub may die in 2-3 years.	Spray with any fixed copper (tribasic, C.O.C.S. etc.) at 2 Tbs. per gal. water. Apply monthly after bloom.
	Cutting rot	Dark rotten area at base of cutting.	Drench soil at 10-14 day intervals <u>either</u> with thiram at 2 3/4 Tbs. per gal. water <u>or</u> Terraclor 75% WP at 1 Tbs. per gal. water. Use 1 pt. of drench per sq. ft. of soil.
	Leaf and stem gall	Leaves thickened into bladder-like galls.	Spray with <u>either</u> zineb at 1 1/2 Tbs. per gal. water <u>or</u> ferbam at 2 Tbs. per gal. water before leaves unfold.
	Rust	Orange pustules on underside of leaves.	Spray at 10-day intervals in July and August with ferbam at 2 1/2 Tbs. <u>plus</u> wettable sulfur at 2 Tbs. per gal. water.
	Powdery mildew	Leaves covered with white powdery mold in late summer.	When mildew appears, spray or dust with <u>either</u> wettable sulfur at 2 Tbs. per gal. water <u>or</u> Karathane at 2 tsp. per gal. water.

Plant	Disease	Symptoms	Fungicide and Amount
Barberry	Bacterial leaf spot	Dark green, irregular, water-soaked spots on leaves.	When new leaves start to appear, apply 2-3 sprays of 8-8-100 bordeaux mixture at 10-day intervals.
Bittersweet (Celastrus)	Powdery mildew	Leaves covered with white powdery growth, turn yellow and die.	When mildew appears, spray or dust at 7-day intervals with wettable sulfur at 2 Tbs. per gal. water.
Boxwood (Buxus)	Canker	Cankers form in crotches. Bark of cankers peels off easily from gray to black discolored wood beneath.	Remove and burn dead leaves in crotches in spring. Prune out infected branches. Spray with liquid lime-sulfur at 5 Tbs. per gal. water before new growth starts.
	Leaf spot	Leaves turn straw yellow with under-surface dotted with black fruiting bodies of causal fungus. Common on winter-injured shrubs.	Remove and destroy old dead leaves.
Buttonbush (Cephalanthus)	Leaf spot	Small brown or black areas on leaves.	When leaves start to open, spray 3 times at 14-day intervals with ferbam at 2 1/2 Tbs. per gal. water.
	Powdery mildew	White, powdery coating on leaves in midsummer.	When mildew appears, spray or dust at 7-day intervals with wettable sulfur.
Cherry, Hansen's Bush	Brown rot	Leaves and twigs turn brown and die. Dead portions usually covered with masses of brown powdery spores.	Prune out and destroy infected twigs. Starting just before blossoms open, apply 2 sprays at 10-day intervals of <u>either</u> wettable sulfur at 2 Tbs. per gal. water <u>or</u> captan at 2 Tbs. per gal. water.
Chokeberry (Aronia)	Rust	Galls with tube-like projections on leaves, stems, and fruits. Distinct dark-colored cankers causing withering and dieback of twig tips.	Do not plant near southern white cedar. Prune out infected twigs. Spray with captan at 2 Tbs. per gal. water.
Clematis	Leaf spot	Irregular reddish-brown spots on lower leaves. Leaves turn yellow and fall off.	Spray at 7-day intervals with zineb 75% WP at 1 1/2 Tbs. per gal. water.
	Stem rot	Stems attacked near soil line. Brown-black lesion may girdle stem causing upper part of plant to die.	Propagate from disease-free plants, or sow seed in beds in new location. Spray with zineb as suggested for leaf spot.

Cotoneaster	Fireblight	Flowers near growing tip suddenly wilt and turn brown or black. Twigs may also wilt.	Use resistant species, such as <u>C. franchet</u> , <u>C. simmonsii</u> var: <u>elegans</u> , and <u>C. adpressa</u> . Destroy nearby neglected pear, quince or apple trees. Spray at mid-bloom with zineb 75% WP at 2 Tbs. per gal. water.
Crabapple (Flowering)	Cedar-apple rust	Orange pustules on leaves and fruit.	Do not plant near red cedars. Spray 3 times at 10-day intervals with ferbam at 2 1/2 Tbs. <u>plus</u> wettable sulfur at 2 Tbs. per gal. water, starting when first flowers open.
Dogwood	Crown or trunk canker	Trees unthrifty. Leaves small, light green, turning prematurely red in late summer. Twigs and large branches die.	Avoid wounds on trunk and branches. Cut away dead tissue in cankers and swab with 1:1000 bichloride of mercury solution.
	Leaf spot	Angular, grayish spots with purple margins on leaves.	Spray with captan at 1 1/2 Tbs. per gal. water starting when blossoms start to open. Repeat monthly through summer.
	Powdery mildew	White, powdery mold on leaves in fall.	Spray or dust with wettable sulfur at 7-day intervals, starting when mildew first appears.
	Flower and leaf blight (Botrytis)	Irregular, brown patches on flower petals.	Spray with either ferbam at 2 1/2 Tbs. per gal. water <u>or</u> captan at 1 1/2 Tbs. per gal. water when disease appears.
Dutchman's Pipe	Leaf spots	Circular or angular areas on leaves.	Spray several times at 14-day intervals with ferbam at 2 1/2 Tbs. per gal. water.
Euonymus	Crown gall	Large galls on stems and roots.	Do not plant euonymus with galls on roots. Remove and destroy infected parts or seriously infected plants.
	Powdery mildew	Foliage covered with white coating of mildew in late summer and fall.	When mildew appears, spray or dust weekly with wettable sulfur. When severe, spray with Karathane at 1 tsp. per gal. water.

Plant	Disease	Symptoms	Fungicide and Amount
Firethorn (Pyracantha)	Fireblight	Withering, dying and browning or blackening of new shrubs.	Plant resistant varieties, like <u>P. gibbsii</u> var: <u>yunnanensis</u> or <u>P. coccinea lalandii</u> . Destroy nearby neglected apple and pear trees. Cut out infected branches between November and March. Spray with zineb 65% WP at 2 Tbs. per gal. water in mid-bloom.
	Scab	Dark velvety, sooty spots on leaves. Leaves turn yellow and drop prematurely	Spray with ferbam at 2 1/2 Tbs. per gal. water. Make 3-5 applications at 14-day intervals starting just before bloom.
Hawthorn (Crataegus)	Leaf blight	Small, angular, reddish-brown spots on leaves.	As soon as new leaves have unfolded spray with zineb 1 1/3 Tbs. per gal. water. 3 sprays at 10-day intervals.
	Fireblight	Withering, dying and browning or blackening of new shrubs.	Destroy nearby neglected apple and pear trees. Cut out infected branches in November to March. Spray with zineb 65% WP at 2 Tbs. per gal. water in mid-bloom.
	Rust	Leaves, fruits, twigs deformed. Whitish tubes on surface of galls on swollen twigs.	Spray with ferbam at 2 1/2 Tbs. plus wettable sulfur at 2 Tbs. per gal. water. Make 3 sprays at 7-10-day intervals starting just before flowers open.
	Leaf blight and fruit spot (Monilinia)	Wilting and blighting of leaves during mid May.	Spray same as for rust.
Holly	Leaf rot or drop	Occurs on cuttings causing leaf droppings 2-3 weeks after cuttings are set.	Set cuttings in fresh sterilized sand. Do not take cuttings from branches that touch ground.
	Tar spot	Small yellow spots on leaves in early summer, later turn reddish brown. In fall, black cushion-shaped spots develop just under leaf surface.	Pick off infected leaves. Make 3 sprays with ferbam at 2 1/2 Tbs. per gal. water applied at 14-day intervals beginning in late spring.
	Gray leaf spot	Purplish spots on leaves later become gray. Appear in August-September.	Spray with zineb at 2 Tbs. per gal. water. Make 2 sprays in spring at 10-day intervals starting when new leaves unfold. Repeat around August 15.

Honeysuckle	Powdery mildew	Leaves covered with white powdery mold in late summer.	When mildew appears, spray or dust at 7-day intervals with wettable sulfur.
Hydrangea	Leaf spot	Brown spots on leaves near margins.	Cut off and burn severely infected tops. When disease appears, spray with ferbam at 2 1/2 Tbs. per gal. water.
	Bacterial wilt	Flowers and young leaves wilt and turn brown.	Remove infected flowers and leaves. Destroy dead, infected plants.
	Rust	Rusty-brown pustules on leaves.	Do not sprinkle infected plants with water. Spray with ferbam at 2 1/2 Tbs. <u>plus</u> wettable sulfur at 2 Tbs. per gal. water.
	Gray mold	Dense clusters of flowers covered with powdery, gray masses of spores.	Cut off and destroy infected flowers. Spray with zineb at 1 1/3 Tbs. per gal. water at 10-day intervals until disease is checked.
	Powdery mildew	Leaves covered with white powdery mold in late summer.	When mildew appears, spray or dust at 7-day intervals with wettable sulfur or spray with Karathane at 1 tsp. per gal. water.
Ivy (Boston) Virginia Creeper	Leaf spot	Angular, reddish to grayish brown spots on leaves.	Spray with wettable sulfur at 2 Tbs. <u>plus</u> ferbam at 2 1/2 Tbs. per gal. water. Make applications just before bloom, just after bloom and 7-10 days later.
	Powdery mildew	Leaves covered with grayish, powdery, moldy patches in late summer.	Spray or dust at 7-day intervals with wettable sulfur.
Ivy (English)	Leaf spot and twig blight (Phyllosticta)	Pale dry spots on leaves with concentric rings. Plants have ragged appearance.	Remove and burn infected leaves. Spray twice with fixed copper (containing 50% metallic copper) at 2 Tbs. <u>plus</u> fresh lime at 2 Tbs. per gal. water. Spray when disease first appears. Repeat at 7-10 day intervals.
	Leaf and stem spot (Amersporium)	Oval or circular brown spots 1/2" in diameter on both leaf surfaces.	Same as leaf spot and twig blight.

Plant	Disease	Symptoms	Fungicide and Amount
Juniper, Red Cedar	Twig blight (Phomopsis)	Tips of infected twigs turn brown and die.	Prune out and burn infected twigs. Plant resistant varieties like Spiny Greek juniper, Keteleer red cedar and Hill juniper. Spray with phenyl mercury (Puralized) at 1 tsp. per gal. water. Make 2 sprays at 10-day intervals as soon as new leaves start to develop.
	Rust	Large gray-brown galls like golf balls on twigs, produce slimy orange spore horns following rains in May.	Spray infected junipers with either Elgetol or Krenite at 2 1/2 Tbs. per gal. water or Acti-Spray at 1.380 mg. tablet per 2 gal. water, when orange spore horns appear.
Kerria	Leaf and twig blight (Coccomyces)	Tips of twigs turn brown and gradually die back. Small black fruiting bodies appear on leaves and stems of twigs.	Cut out diseased twigs, and rake up and burn dead leaves. Apply 4 sprays at 10-day intervals of ferbam at 2 1/2 Tbs. per gal. water starting when leaves are 1/4 inch long.
	Twig blight (Phomopsis)	Oval or long, irregular, tan spots with raised edges on main stems.	Same as for twig and leaf blight.
Laurel (Mountain)	Leaf spot (Mycosphaerella)	Irregular, circular, greyish-white or silvery spots with purple borders.	Burn fallen and heavily-spotted leaves that cling to the shrub. When new growth starts, spray with ferbam at 2 1/2 Tbs. per gal. water. Reapply at 10-day intervals until leaves are full grown. Repeat sprays in September.
	Leaf blight (Phomopsis)	Circular, brown, zonate areas on leaves which enlarge, run together and may involve the entire leaf blade.	Same as for leaf spot.
Leucothoe	Leaf spots	Spots about 1/12 inch in diameter. Usually covered with small black fruiting bodies.	Pick off and burn infected leaves. Apply 3 sprays at 14-day intervals of ferbam at 2 1/2 Tbs. per gal. water, starting when leaves are 1/4" long.

Lilac	Bacterial blight	Brown to black spots on leaves. Shoots usually turn black and die. Flower buds open blackened. Flower clusters limp and dark brown.	Cut out and destroy infected twigs when they appear. Spray 2-3 times in spring at 8-10-day intervals with 8-8-100 bordeaux mixture.
	Shoot blight (Phytophthora)	Like bacterial blight but killing of shoots more extensive.	Same as for bacterial blight.
	Powdery mildew	Grayish-white, moldy blotches on leaves in late summer.	When mildew appears, <u>either</u> spray or dust with wettable sulfur <u>or</u> spray with Karathane at 1 tsp. per gal. water at 7-day intervals.
Mahonia	Rust	Bright orange spots on leaves in spring.	Plant rust-resistant species, like <u>M. aquafolium</u> and <u>M. bealei</u> .
Matrimony Vine	Powdery mildew	Leaves covered with thin white mold during late summer and fall.	When mildew appears, spray or dust with wettable sulfur at 7-day intervals.
Mock Orange	Leaf spot (Ascochyta)	Brown, circular spots on leaves.	Spray 3 times at 14-day intervals with fixed copper at 2 Tbs. <u>plus</u> hydrated spray lime at 2 Tbs. per gal. water.
	Nectria canker	Rough cankers on stems. Twigs and branches die back. Small, red fruiting bodies appear on dead bark.	Cut off and destroy affected twigs and branches.
New Jersey Tea	Powdery mildew	Leaves covered with a white mold in late summer and fall.	When mildew appears, spray or dust weekly with wettable sulfur.
Pachysandra	Leaf and stem blight (volutella)	Large brown to black areas on leaves and stems. Pink spore masses formed in wet weather.	When disease appears, start spraying with <u>either</u> ferbam at 2 1/2 Tbs. per gal. water <u>or</u> captan at 1 1/2 Tbs. per gal. water. Continue at 7-day intervals as long as disease spreads.
Periwinkle (Vinca, Ground Myrtle)	Stem canker (Rhizoctonia)	Stems turn dark brown to black at soil line. Shoots die. Occurs in patches. Usually severe when wet	Spray weekly with fixed copper at 2 Tbs. <u>plus</u> hydrated spray lime at 2 Tbs. per gal. water.
Privet	Anthrachnose, Canker or twig blight (Giomarella)	Twigs blighted. Cankers on twigs dotted with pinkish fruiting bodies. Leaves dry out and cling to blighted twigs.	Amur, Ibora, Regel's border and California privets are resistant. When disease appears, spray with <u>either</u> ferbam at 2 1/2 Tbs. per gal. water <u>or</u> Captan at 1 1/2 Tbs. per gal. water at 7-day intervals as long as disease is present..

Plant	Disease	Symptoms	Fungicide and Amount
Privet (Cont.)	Crown gall	Large "brain-like" galls on stems.	Plant only gall-free plants. If galls appear, remove and destroy affected parts and/or seriously infected plants.
	Nectria canker	Rough, reddish cankers on stems and twigs.	Cut off and destroy affected parts. Spray with ferbam at 2 1/2 Tbs. per gal. water at 7-day intervals.
Quince (Japanese) (Flowering)	Fireblight	Flowers turn brown and wilt. Twigs and terminals die.	Destroy nearby neglected apple, quince or pear trees. Spray with zineb at 1 1/3 Tbs. per gal. water at mid-bloom.
Redbud	Canker (Botryosphaeria)	Sunken oval cankers at base of dying branches.	Prune out and burn severely infected branches.
Rhododendron	Damping-off	Seedlings die. Dark discolored area on stem at soil line.	Drench soil with captan at 1 Tbs. per gal. water, using 1 pt. per sq. ft. of soil.
	Leaf and stem spots	Spots on leaves range from small, silvery-gray areas to dark brown, zonate dead areas covering half the leaf.	Avoid sunscald and winter injury. Spray at 10-day intervals with ferbam at 2 1/2 Tbs. per gal. water starting immediately after bloom.
	Gloeosporium leaf spot	Severe spotting of leaves especially on hybrids like Lee's Dark Purple. Spots circular to irregular, light tan with dark brown borders.	Same as for leaf and stem spots.
	Dieback (Phytophthora)	Leaves roll up and droop. Dark brown cankers on tender new growth. General dieback of branches.	After bloom, spray with 4-4-100 bordeaux mixture. Make two applications 10-14 days apart. Prune out diseased twigs cutting off well below canker.
	Wilt (Phytophthora)	Leaves turn yellow and wilt. Stems turn brown at soil line. Root and crown rot develops, and plants die.	Adjust soil pH to 4.0-4.5 by using peat, leaf mold, well rotted sawdust or aluminum sulfate.
	Crown rot (Phytophthora)	Main roots and basal portions of stems turn brown. Branches wilt and die.	Remove and destroy badly diseased plants and the soil around them; no effective chemical treatment.
	Powdery mildew	Leaves covered with white mold in late summer and early fall.	When mildew appears, spray or dust weekly with wettable sulfur.

Service-Berry (Shadbush)	Rust	Horned galls on undersides of leaves and also on fruits.	Do not plant near southern white cedars.
	Witches broom (Black mildew)	Development of many new shoots in bunches forming a broom.	Cut off and burn affected leaves and twigs.
Snowberry	Spot anthracnose (Sphaceloma)	Small dark purple or black spots with gray centers on leaves in early spring.	Before buds open in spring, spray with liquid lime-sulfur at 5 Tbs. per gal. water. Follow with sprays of ferbam at 2 1/2 Tbs. per gal. water at 7-10-day intervals until fruit forms.
	Anthracnose (Glomerella)	Cinnamon-colored spots on leaves which turn black, rough, mummified and fall prematurely.	Same as for spot anthracnose.
	Berry rot (Alternaria)	Berries turn yellow or brown and develop soft, watery rot.	Same as for spot anthracnose.
Staghorn Sumac	Fusarium wilt	Leaves wilt. Affected branches have a brown discoloration in wood. Plant is dwarfed, yellow and shows premature autumn coloration.	When disease appears, dust soil around plants with zineb at 5 lbs. per 100 sq. ft. Work into soil and water in.
	Powdery mildew	Leaves covered with a white mold during late summer or early fall.	When mildew appears, spray or dust with wettable sulfur weekly.
Sweet Fern (Comptonia)	Rust	Long, brown, thread-like spore horns extending from undersides of leaves.	Do not grow sweet fern near three-needle pine trees.
Trumpet Vine	Powdery mildew	White mold on leaves in late summer and fall.	When mildew appears, spray or dust with wettable sulfur weekly.
Viburnum	Bacterial leaf spot	Irregular, water-soaked spots on leaves and brown, sunken cankers on young stems.	Remove and burn infected leaves. Spray with fixed copper (containing 50% metallic copper) at 2 Tbs. plus hydrated spray lime at 2 Tbs. per gal. water. Make 2-3 applications at 7-day intervals.
	Powdery mildew	White powdery mold on leaves.	Spray or dust weekly with wettable sulfur when mildew appears.

Plant	Disease	Symptoms	Fungicide and Amount
Witch Hazel	Leaf spot	Small brown spots on leaves quickly enlarge to reddish-brown blotches causing leaf drop.	Spray 3 times at 14-day intervals with fixed copper (containing 50% metallic copper) at 2 Tbs. plus hydrated spray lime at 2 Tbs. per gal. water starting when leaves are 1/4" long.
	Powdery mildew	White powdery mold on leaves.	Spray or dust weekly with wettable sulfur.

WP = wettable powder; Tbs. = tablespoons; tsp. = teaspoons.

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Cooperative Extension Work in Agriculture and Home Economics

State of Indiana, Purdue University

and the United States Department of Agriculture Cooperating

H. G. Diesslin, Director, Lafayette, Indiana

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